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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
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10/520,489

01/07/2005

Alan Breen

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EXAMINER

BOR, HELENE CATHERINE

ART UNIT

PAPER NUMBER

3768

MAIL DATE

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PAPER

**Please find below and/or attached an Office communication concerning this application or proceeding.**

The time period for reply, if any, is set in the attached communication.

<b>Office Action Summary</b>	<b>Application No.</b> 10/520,489	<b>Applicant(s)</b> BREEN, ALAN	
	<b>Examiner</b> HELENE BOR	<b>Art Unit</b> 3768	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

### Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

### Status

- 1) ☒ Responsive to communication(s) filed on 07 April 2008.
- 2a) ☐ This action is **FINAL**.                      2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

### Disposition of Claims

- 4) ☒ Claim(s) 9-32 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 9-32 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

### Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on \_\_\_\_\_ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

### Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All    b) ☐ Some \*    c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
  2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
  3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

### Attachment(s)

- |  |   |
|--|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892)            | 4) <input type="checkbox"/> Interview Summary (PTO-413)           |
| 2) <input type="checkbox"/> Notice of Draftperson's Patent Drawing Review (PTO-948)    | Paper No(s)/Mail Date. _____                                      |
| 3) <input checked="" type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08) | 5) <input type="checkbox"/> Notice of Informal Patent Application |
| Paper No(s)/Mail Date <u>09/24/2007 &amp; 06/12/2007 &amp; 01/07/2005</u> .            | 6) <input type="checkbox"/> Other: _____                          |



## **DETAILED ACTION**

### ***Continued Examination Under 37 CFR 1.114***

1. A request for continued examination under 37 CFR 1.114, including the fee set forth in 37 CFR 1.17(e), was filed in this application after final rejection. Since this application is eligible for continued examination under 37 CFR 1.114, and the fee set forth in 37 CFR 1.17(e) has been timely paid, the finality of the previous Office action has been withdrawn pursuant to 37 CFR 1.114. Applicant's submission filed on 04/07/2008 has been entered.

### ***Claim Rejections - 35 USC § 103***

2. The text of those sections of Title 35, U.S. Code not included in this action can be found in a prior Office action.

3. Claim 9 & 11-12 are rejected under 35 U.S.C. 103(a) as being unpatentable over Votruba'859 (US Patent No. 5,899,856), in view of Bejjani042 (US Patent No. 5,090,042) and further in view of Schindler (US Patent No. 7,243,387 B2).

**Claim 9:** Votruba'859 teaches a passive motion device (Figure 9) for which comprises a horizontal platform base (Figure 9, Element 29) and a horizontal passive motion platform (Figure 9, Element 6 & 25) composed of a horizontal static platform (Figure 9, Element 25) which is rigidly connected to the upper lateral surface of the platform base (Figure 9, Element 29) and a horizontal laterally movable platform (Figure 9, Element 6) which is flexibly connected to the static platform (Figure 9, Element 25), in which the static platform (Figure 9, Element 25) is adjacent to the laterally movable platform (Figure 9, Element 6) which together both form the passive motion platform (Figure 9, Element 6 & 25), in which the movement of the laterally movable platform (Figure 9, Element 6) continuously is driven during use by a motor (Figure 1,

Element 9) attached to the platform base (Figure 9, Element 29) where movement of the laterally movable platform (Figure 9, Element 6) is achieved by means of a control arm (Figure 9, Element 19) that operably connects the laterally moveable platform (Figure 9, Element 6) to the motor (Figure 1, Element 9). Votruba'859 teaches an imaging device (Figure 16, Element 101).

Votruba'859 fails to teach in detail the processing system and continuously movement of a joint. However, Schindler'387 teaches the use of continuous passive movement to continuously guide a patient through a range of motion for function imaging in order to view the full range of the physiologically visual scope of patient being examined (Col. 3, Line 5-20). It would have been obvious to one of ordinary skill in the art to modify the system of Votruba'859 to include the continuous passive movement as taught by Schindler'387 in order to view the full range of the physiologically visual scope of patient being examined (Col. 3, Line 5-20).

Furthermore Bejjani'042 teaches a processing system which comprises a computer incorporating a means for real time digital sampling of images of the continuously moving joints during a continuous movement of the joint (Col. 3, Line 36-42) in order to take advantage of a processing system that increases the amount of data derived from the recorded images (Col. 2, Line 15-17). It would have been obvious to one of ordinary skill in the art at the time of the invention to modify the system of Votruba'859 and Schindler'387 to include the processing system as taught by Bejjani'042 in order to take advantage of a processing system that increases the amount of data derived from the recorded images (Col. 2, Line 15-17). Bejjani'042 teaches the means for recording time code (Col. 5, Line 4-8) and motion (Col. 5, Line 27-45) in order to take advantage of the data being processed, manipulated and restored over time (Col. 5, Line 29-36). It would have been obvious to one of ordinary skill in the art at the time of the invention to

modify the system of Votruba'859 and Schindler'387 to include the processing system as taught by Bejjani'042 in order to take advantage of the data being processed, manipulated and restored over time (Col. 5, Line 29-36). In addition, that such means allow for the automation of the process and eliminates the need for manually conversion and so saves time (Col. 5, Line 40-45). Bejjani'042 teaches means for storage of these images at high resolution (Col. 4, Line 42-45) for the benefit of the stored motion data later being retrieved from memory for viewing and analysis (Col. 6, Line 16-17). It would have been obvious to one of ordinary skill in the art at the time of the invention to modify the system of Votruba'859 and Schindler'387 to include the processing system as taught by Bejjani'042 for the benefit of the stored motion data later being retrieved from memory for viewing and analysis (Col. 6, Line 16-17). Bejjani'042 teaches means for recognising templates attributed to individual bones (Col. 4, Line 3-25) for the benefit of displaying in real-time motion, review or analysis (Col. 3, Line 3-8). It would have been obvious to one of ordinary skill in the art at the time of the invention to modify the system of Votruba'859 and Schindler'387 to include the processing system as taught by Bejjani'042 for the benefit of displaying in real-time motion, review or analysis (Col. 3, Line 3-8). Bejjani'042 teaches means for tracking these automatically using cross- correlation functions and means for geometric transformation of the positional data to graphically display their relative motion over time (Col. 6, Line 16-34) in order to take advantage of the greater level of information (Col. 6, Line 30-34). Therefore, it would have been obvious to one of ordinary skill in the art at the time of the invention to modify the system of Votruba'859 and Schindler'387 to include the processing system as taught by Bejjani'042 in order to take advantage of the greater level of information (Col. 6, Line 30-34).

**Claim 11:** Votruba'859 teaches the imaging device is a magnetic resonance scanner (Figure 16, Element 101).

**Claim 12:** Votruba'859 teaches in which the laterally movable platform (Figure 9, Element 6) is situated on a support which lies on the upper surface of the platform base (Figure 9, Element 29).

4. Claim 10 & 13 - 14 are rejected under 35 U.S.C. 103(a) as being unpatentable over Votruba'859 (US Patent No. 5,899,856), in view of Schindler (US Patent No. 7,243,387 B2), in view of Bejjani042 (US Patent No. 5,090,042) and further in view of Bell'859 (US Patent No. 5,099,859).

**Claim 10 & 13:** Votruba'859 fails to teach where the imaging device is an X-ray tube. However, Bell'859 teaches the use of and x-ray with an image intensifier and the dose control for the use of imaging in-vivo motion (Col. 6, Line 1-9) in order to reveal more information (Col. 1, Line 30-36). It would have been obvious to one of ordinary skill in the art at the time of the invention to modify the system of Votruba'859, Schindler'387 and Bejjani'042 to include the X-ray tube as taught by Bell'859 in order to reveal more information (Col. 1, Line 30-36).

**Claim 14:** Votruba'859 teaches the imaging device is a magnetic resonance scanner (Figure Element 101).

5. Claim 15 - 32 are rejected under 35 U.S.C. 103(a) as being unpatentable over Votruba'859 (US Patent No. 5,899,856), in view of Bejjani042 (US Patent No. 5,090,042) and further in view of Bell'859 (US Patent No. 5,099,859).

**Claim 15:** Votruba'859 the automated measurement method of the relative motion of skeletal structures in vivo (Col. 2, Line 26-28). Votruba'859 teaches to position the subject on a

passive motion device (Figure 16, Element 31). Votruba'859 teaches initiating the imaging procedure of the subject positioned on the passive motion device and collecting image data using an imaging device (Col. 6, Line 39-54). Votruba'859 teaches sampling the data collected by the imaging device into the processing system (Col. 6, Line 39-62)

Votruba'859 fails to teach the imaging processing aspect of the claimed invention. However, Bejjani'042 teaches superimposing time code on the images for the benefit of proper time registration and play-back (Col. 5, Line 4-8). It would have been obvious to one of ordinary skill in the art at the time of the invention to combine the teachings of Bell'859, Bejjani'042 and Votruba'859 in order to take advantage of record keeping and documentation as well as tracking patient exposure (Col. 7, Line 22-27 & Col. 7, Line 55-62). Bejjani'042 teaches tracking templates marked on individual bone segments at the start of the motion sequence (Col. 4, Line 3-36). It would have been obvious to one of ordinary skill in the art at the time of the invention to combine the teachings of Bell'859, Bejjani'042 and Votruba'859 for the benefit of motion analysis and defining points of interest (Col. 4, Line 20 – 45). Bell'859 teaches transforming the results of tracking to reflect the changing spatial relationship between image segments (Col. 4, Line 32-40 & Col. 11, Line 32-38). It would have been obvious to one of ordinary skill in the art at the time of the invention to combine the teachings of Bell'859, Bejjani'042 and Votruba'859 for the benefit of permitting the standardization of interpretations of skeletal studies (Col. 4, Line 29-31). Bell'859 teaches presenting the output in graphical form (Col. 6, Line 1-21, Figure 5 & Figure 6). It would have been obvious to one of ordinary skill in the art at the time of the invention to combine the teachings of Bell'859, Bejjani'042 and Votruba'859 for the benefit of permitting the standardization of interpretations of skeletal studies (Col. 4, Line 29-31).

**Claim 16, 19 & 25:** Votruba'859 fails to teach where the imaging device is an X-ray tube. However, Bell'859 teaches the use of and x-ray with an image intensifier and the dose control for the use of imaging in-vivo motion (Col. 6, Line 1-9) in order to reveal more information (Col. 1, Line 30-36). It would have been obvious to one of ordinary skill in the art at the time of the invention to modify the system of Votruba'859 and Bejjani'042 to include the X-ray tube as taught by Bell'859 in order to reveal more information (Col. 1, Line 30-36).

**Claim 17:** Votruba'859 teaches the imaging device is a magnetic resonance scanner (Figure Element 101).

**Claim 18:** Votruba'859 teaches in which the laterally movable platform (Figure 9, Element 6) is situated on a support which lies on the upper surface of the platform base (Figure 9, Element 29).

**Claim 20, 26 & 29:** Votruba'859 teaches the imaging device is a magnetic resonance scanner (Figure Element 101).

**Claim 22:** Votruba'859 teaches the relative motion of lumbar vertebrae L3 to L3, L3 to L4 and L4 to L5 (Col. 8, Line 26-43). Votruba'859 fails to teach tracking the lumbar vertebrae simultaneously or separately. However, Bejjani'042 teaches tracking of the cervical vertebrae such as C4, C5, or C6 either simultaneously or separately as determined by the operators (Col. 4, Line 23-27 & Figure 1, Element P1, P2, P3). It would have been obvious to one of ordinary skill in the art at the time of the invention to combine the teachings of Bell'859, Bejjani'042 and Votruba'859 for the benefit of standardizing of interpretations of skeletal studies (Col. 4, Line 29-31).

**Claim 24:** Votruba'859 fails to teach the diagnosis of a pseudoarthrosis in a subject. However, Bejjani'042 teaches the diagnosis of many internal conditions of the spine, which would include pseudoarthrosis, through the analysis of the relative motion of skeletal structures (Col. 6, Line 39-51). It would have been obvious to one of ordinary skill in the art at the time of the invention to combine the teachings of Bell'859, Bejjani'042 and Votruba'859 for the benefit of an accurate evaluation (Col. 6, Line 39-51).

**Claim 27:** Votruba'859 teaches in which the laterally movable platform (Figure 9, Element 6) is situated on a support which lies on the upper surface of the platform base (Figure 9, Element 29).

**Claim 28:** Votruba'859 fails to teach where the imaging device is an X-ray tube. However, Bell'859 teaches the use of and x-ray with an image intensifier and the dose control (Col. 6, Line 1-9) for the use of imaging in-vivo motion. It would have been obvious to one of ordinary skill in the art at the time of the invention to combine the teachings of Bell'859, Bejjani'042 and Votruba'859 in order to reveal more information (Col. 1, Line 30-36).

**Claim 31:** Votruba'859 teaches the relative motion of lumbar vertebrae L3 to L3, L3 to L4 and L4 to L5 (Col. 8, Line 26-43). Votruba'859 fails to teach tracking the lumbar vertebrae simultaneously or separately. However, Bejjani'042 teaches tracking of the cervical vertebrae such as C4, C5, or C6 either simultaneously or separately as determined by the operators (Col. 4, Line 23-27 & Figure 1, Element P1, P2, P3). It would have been obvious to one of ordinary skill in the art at the time of the invention to combine the teachings of Bell'859, Bejjani'042 and Votruba'859 for benefit of standardizing of interpretations of skeletal studies (Col. 4, Line 29-31).

6. Claim 21, 23, 30 & 32 are rejected under 35 U.S.C. 103(a) as being unpatentable over Votruba'859 (US Patent No. 5,899,856) in view of Bejjani'042 (US Patent No. 5,090,042), in view of Bell'859 (US Patent No. 5,099,859) and further in view of McGregor'060 (US Patent No. 5,891,060).

**Claim 21:** Votruba'859 fails to teach a calibration step is carried out prior to the method of claim 15. However, McGregor'060 teaches the calibration step is carried out prior to the start of the procedure (Col. 16, Line 53 – Col. 17, Line 32). It would have been obvious to one of ordinary skill in the art at the time of the invention to combine the teachings of Bell'859, Bejjani'042, McGregor'060 and Votruba'859 in order to provide verification (Col. 16, Line 53 – Col. 17, Line 32).

**Claim 23:** Votruba'859 teaches the relative motion of lumbar vertebrae L3 to L3, L3 to L4 and L4 to L5 (Col. 8, Line 26-43). Votruba'859 fails to teach tracking the lumbar vertebrae simultaneously or separately. However, Bejjani'042 teaches tracking of the cervical vertebrae such as C4, C5, or C6 either simultaneously or separately as determined by the operators (Col. 4, Line 23-27 & Figure 1, Element P1, P2, P3). It would have been obvious to one of ordinary skill in the art at the time of the invention to combine the teachings of Bell'859, Bejjani'042, McGregor'060 and Votruba'859 for the benefit of standardizing of interpretations of skeletal studies (Col. 4, Line 29-31).

**Claim 30:** Votruba'859 fails to teach a calibration step is carried out prior to the method of claim 15. However, McGregor'060 teaches the calibration step is carried out prior to the start of the procedure (Col. 16, Line 53 – Col. 17, Line 32). It would have been obvious to one of ordinary skill in the art at the time of the invention to combine the teachings of Bell'859,

Bejjani'042, McGregor'060 and Votruba'859 in order to provide verification (Col. 16, Line 53 – Col. 17, Line 32).

**Claim 32:** Votruba'859 teaches the relative motion of lumbar vertebrae L3 to L3, L3 to L4 and L4 to L5 (Col. 8, Line 26-43). Votruba'859 fails to teach tracking the lumbar vertebrae simultaneously or separately. However, Bejjani'042 teaches tracking of the cervical vertebrae such as C4, C5, or C6 either simultaneously or separately as determined by the operators (Col. 4, Line 23-27 & Figure 1, Element P1, P2, P3). It would have been obvious to one of ordinary skill in the art at the time of the invention to combine the teachings of Bell'859, Bejjani'042, McGregor'060 and Votruba'859 for the benefit of standardizing of interpretations of skeletal studies (Col. 4, Line 29-31).

### ***Response to Arguments***

7. Applicant's arguments, see Page 9, filed 04/07/2008, with respect to the rejection(s) of claim(s) 1-32 under 103(a) have been fully considered and are persuasive. Therefore, the rejection has been withdrawn. However, upon further consideration, a new ground(s) of rejection is made in view of Votruba'859 (US Patent No. 5,899,856), in view of Bejjani'042 (US Patent No. 5,090,042) and further in view of Schindler (US Patent No. 7,243,387 B2). The Examiner in the interest of speeding the prosecution of the case would like to point out that independent claim 15 does not include any language directed to "continuous motion" or "during sampling of images". The Applicant presented the argument that the Votruba'859 or Bejjani'042 fail to disclose the "means for recording the time code and data from the passive motion platform". The Examiner respectfully disagrees. The specification explains, "The means for recording time code and data from the passive motion 20 platform may be a framegrabber card

compatible with the computer image processing software and a time code generator connected to the computer peripherally (for example a FOR.A TGR2000)” (Page 4). The Examiner contends that the means for recording time code and motion data is a framegrabber (Spec Page 4), just as Bejjani‘042 teaches a framegrabber (Col. 2-15).

***Conclusion***

8. Any inquiry concerning this communication or earlier communications from the examiner should be directed to HELENE BOR whose telephone number is (571)272-2947. The examiner can normally be reached on M-T 8:30am-6:00pm.

If attempts to reach the examiner by telephone are unsuccessful, the examiner’s supervisor, Brian Casler can be reached on 571-272-4956. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

/H. B./  
Examiner, Art Unit 3768

/Brian L Casler/  
Supervisory Patent Examiner, Art Unit  
3737